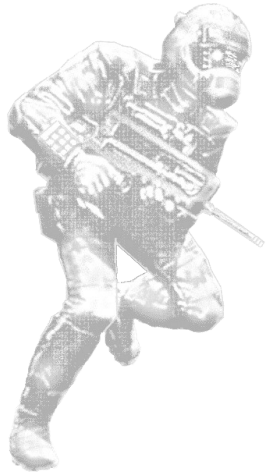
USSOCOM: S & T Perspectives and Direction



5th Annual Science & Engineering Technology Conference/DoD Tech Expo

22 April 2004

Douglas J. Richardson

USSOCOM MISSION

USSOCOM plans, directs, and executes special operations in the conduct of the War on Terrorism in order to disrupt, defeat, and destroy terrorist networks that threaten the United States, its citizens and interests worldwide.

USSOCOM organizes, trains, and equips Special Operations Forces provided to Geographic Combatant Commanders, American Ambassadors and their Country Teams.

THE SOF TEAM

United States Special Operations Command (USSOCOM)

JOINT SPECIAL OPERATIONS COMMAND (JSOC)	UNITED STATES ARMY SPECIAL OPERATIONS COMMAND (USASOC)	NAVY SPECIAL WARFARE COMMAND (NAVSPECWARCOM)	AIR FORCE SPECIAL OPERATIONS COMMAND (AFSOC)
JOINT STANDING BATTLESTAFFS JOINT SPECIAL OPS TACTICS, TECHNIQUES AND TRAINING	SPECIAL FORCES RANGERS SPEC OPNS AVIATION -ROTARY WING PSYOP CIVIL AFFAIRS	SEAL TEAMS SPECIAL BOAT UNITS - SBT SDV ASDS	SO AVIATION -FIXED WING -ROTARY WING SPECIAL TACTICS FID UNIT

TECHNOLOGY PROGRAM MISSION

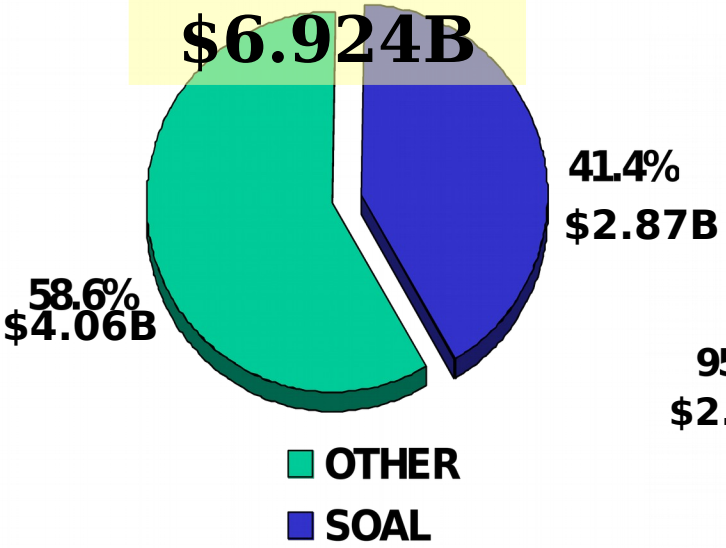
To Provide the Technological Means Enabling Special Operations Forces to Achieve and Maintain the Operational Advantage Over All Adversaries Regardless of Theater of Employment or Conditions

SOF - A FULL SPECTRUM FORCE: From Masters of No Tech/Low Tech Solutions to Leading Edge Technologists

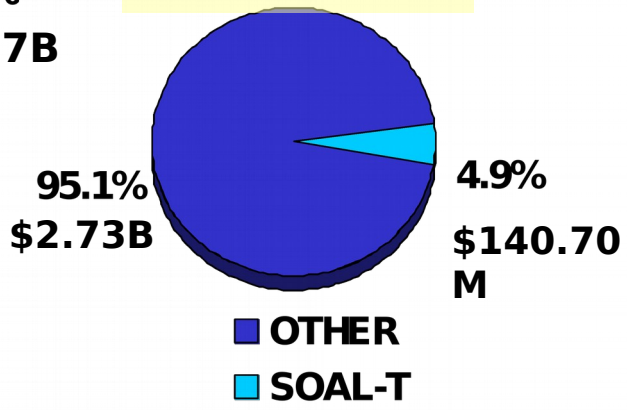
FY04 TOA Overview

USSOCOM Budget is only *1.57%* of Defense Budget

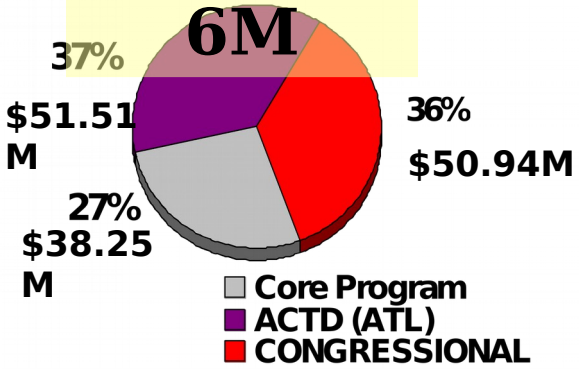
USSOCOM
$6.924B



SOAL
$2.867B



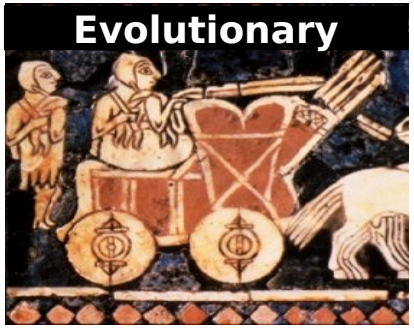
SOAL-T
$140.696M

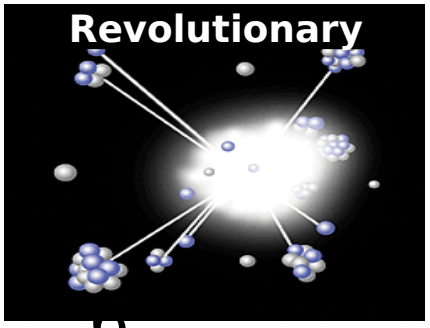


USSOCOM PERSPECTIVE

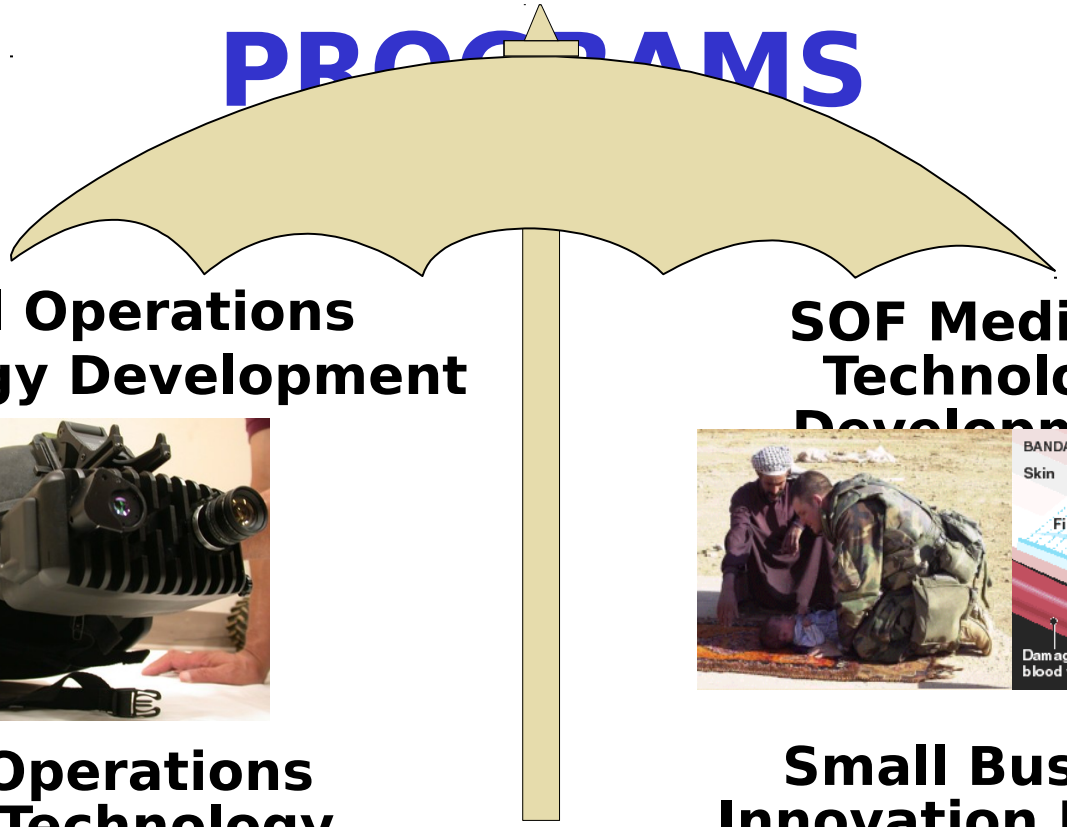
ON TECHNOLOGY

- **Leveraging Those Critical Technologies Giving Us a Decided Advantage**
- **Identifying Leap-ahead Technologies That Will Result in Revolutionary Systems**
- **Exploiting Emerging/Leading-edge Technologies**
- ***Significantly Enhancing the Human Dimension***
- **Leveraging Relevant Technology Projects**
- **Seeking to Infuse Technology Into Concepts**





TECHNOLOGY PROGRAMS

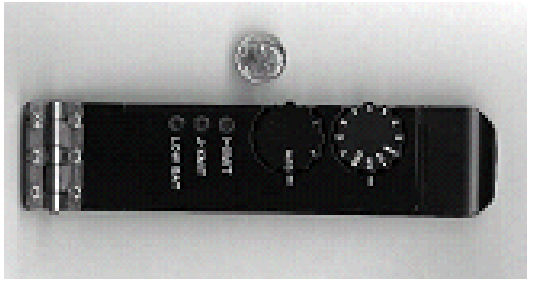


Special Operations Technology Development

SOF Medical Technology Development

Special Operations Special Technology

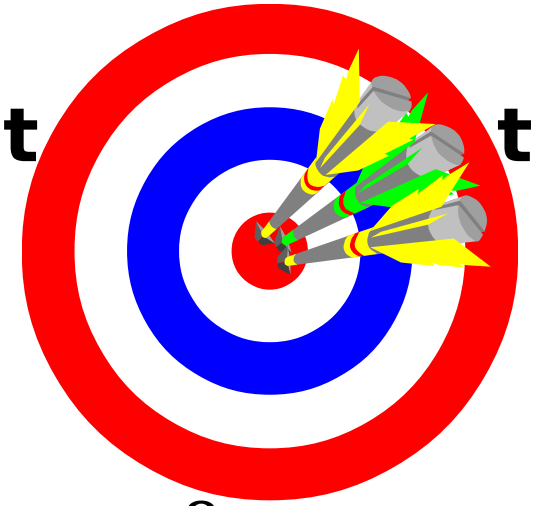
Small Business Innovation Research



TECHNOLOGY THRUST AREAS

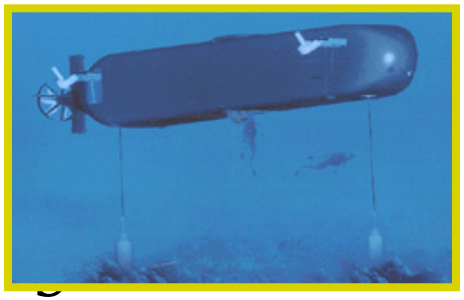
- **Thrust Areas Offer USSOCOM the Greatest Opportunity for Technological Payoff**

- **Thrusts Areas Address Significant Technological Gaps Within the SOF Arena and Offer it the Greatest the Future**

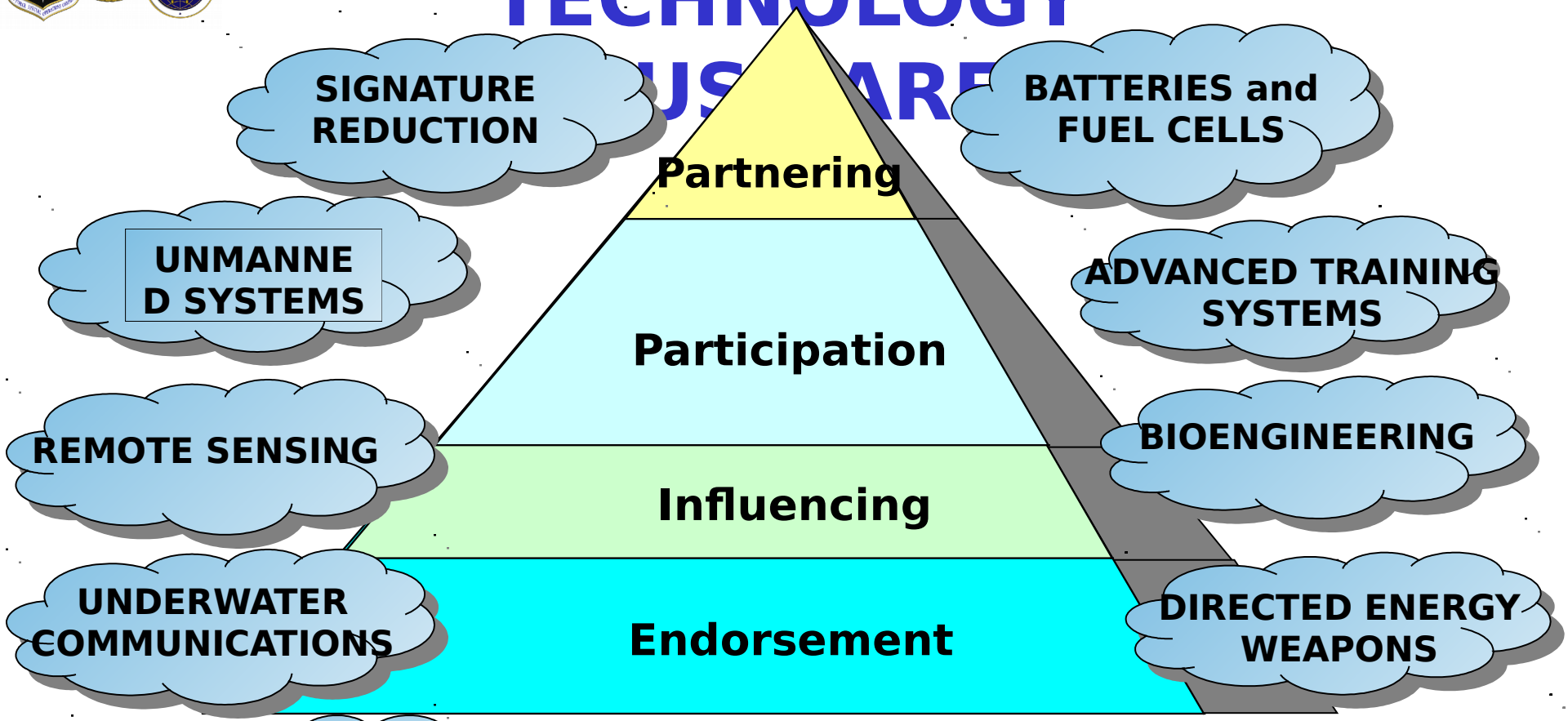


CHARACTERISTICS

- Solutions to Compelling Operational Shortfalls
- Represent Substantial Technological Opportunities
- Leap-ahead, Non-linear Advances in Unconventional Operations
- High Payoff/Accommodate High Risk
- Difficult but Achievable
- Responsive to Component Requirements
- SOF-Peculiar
- USSOCOM is a Willing Partner With Industry, Labs, and Academia



LEVERAGING TECHNOLOGY TO US ARE

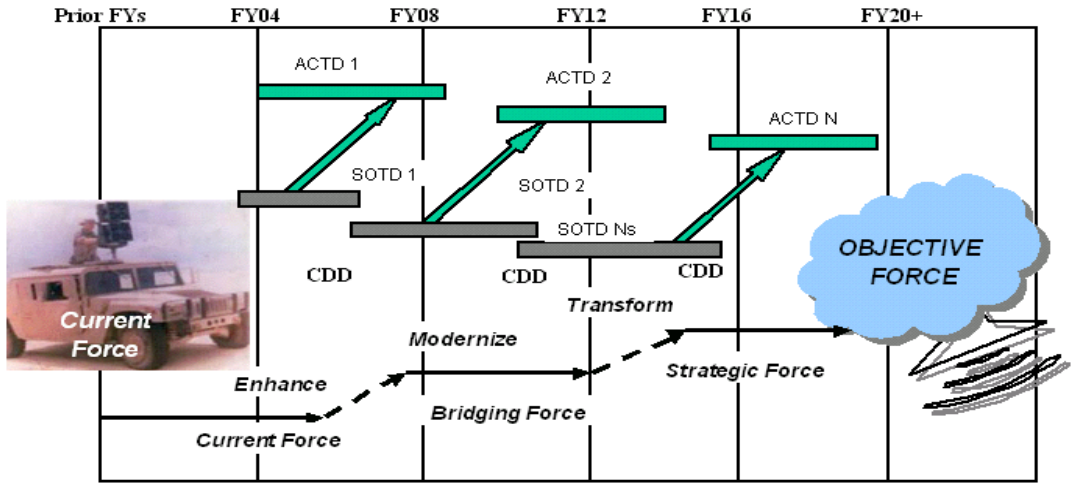


GREATEST OPPORTUNITY FOR OPERATIONAL PAYOFF

TECHNOLOGY ROADMAPS

- **Technology Roadmaps Link the Technology Base to Concept Based Requirements by Projecting Near-, Mid-, and Long-term Development Options**

- **Technology Roadmaps Are Being Developed For Each of the Technology Thrust Areas**



TECHNOLOGY THRUST AREA
Signature Reduction

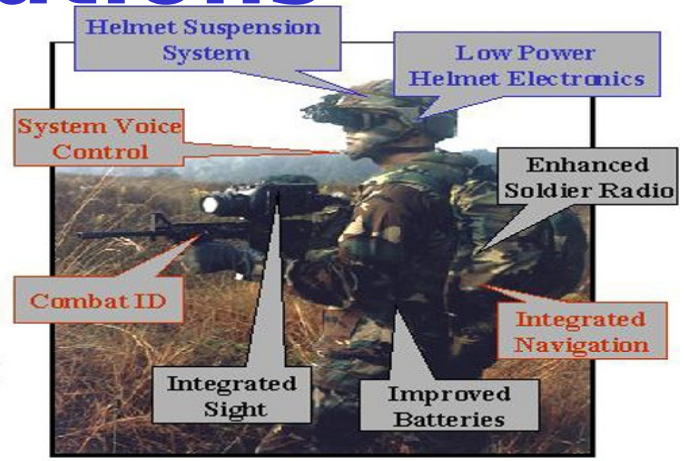
Capabilities/Areas of Concern:

- **Ground operators must operate in all environments virtually undetected**
- **SOF land, sea, and air mobility platforms must be able to access denied areas and not be detected**
- **Goal is to operate without ANY signature (Klingon cloaking device)**

Technology Objective:

- **Signature reduction technologies must eliminate or significantly reduce electromagnetic, visual, laser, IR, RF, seismic, aural and olfactory signature of the SOF operator and his equipment to include air, land, and sea mobility platforms**

TECHNOLOGY THRUST AREA
High Bandwidth/Reachback Communications



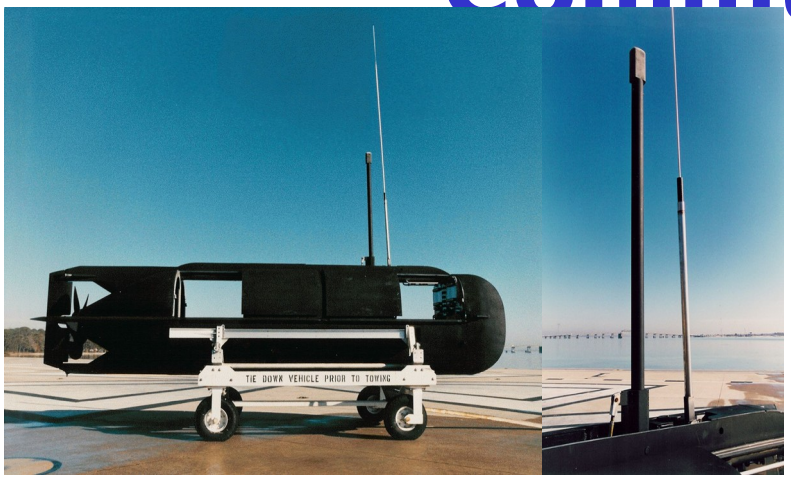
Capabilities/Areas of Concern:

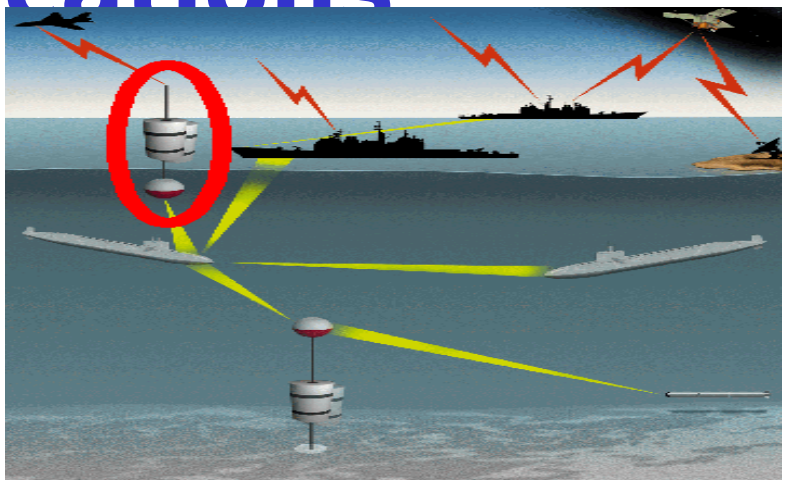
- **Seamless information enterprise across full spectrum of operations and in all environments**
- **Premium on high bandwidth, relay, LPI/LPD, long-range reachback to access worldwide databases**
- **Transmit large volumes of voice, data, full motion video in**

Technology Objective:

- **SOF needs assured and constant operational connectivity, superior situational understanding, a fused set of network centric sensor technologies and the ability to coordinate remote precision fires and effects, communicate with unmanned systems while having the communications architecture in place to have a responsive**

TECHNOLOGY THRUST AREA
Underwater Communications





Capabilities/Areas of Concern:

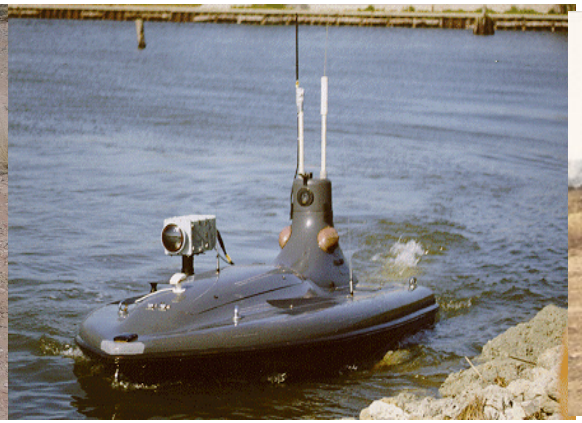
real-time from underwater to above water without the use of above-the-surface antenna

- **SOF must be able to control UAVs, UGVs, and UUVs from the surface or from underwater**

Technology Objective:

- **System must be small, waterproof to 66 feet, and have integrated LPI/LPD**
- **Must communicate with support platforms (ASDS, SDV, UAV, Aircraft) at extended ranges in multimode transmission modes**
- **Must seamlessly integrate with future naval**

TECHNOLOGY THRUST AREA
Unmanned Systems



Capabilities/Areas of Concern:

reconfigurable man-packable systems that crawl, fly, and swim in all environments with operating ranges in hundreds of miles for several months at a time

- **Systems must assist overall SOF situational awareness by extending existing ISR&T networks well beyond today's**

Technology Objective:

- **Unmanned, semiautonomous, autonomous robotic systems (air, land, sea, and future space) from tactical to nano size for missions requiring R&S, target designation, destruction and assessment, NBC activities, and CP in deeply buried complexes**

TECHNOLOGY THRUST AREA
Batteries/Fuel Cells

Capabilities/Areas of Concern:

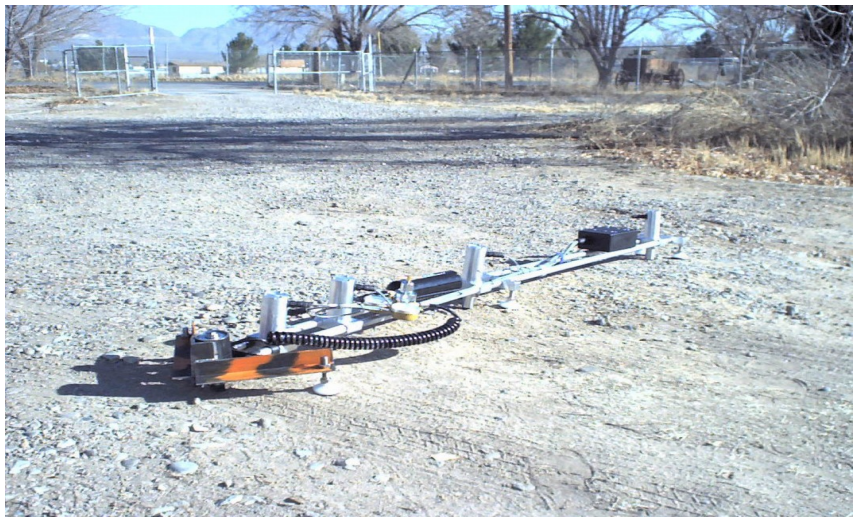
interchangeable power source

- **Alternate power sources such as the human body**
- **Power systems must meet increasing requirement for immense amounts of information being sent back to Joint HQs from deep within the battlespace**

Technology Objective:

- **Power sources must be capable of continuous operation with minimal thermal, electromagnetic, acoustic, or visual signature, and operate effectively underwater and underground**
- **Lightweight, small, maintenance free, versatile, and inexpensive**

TECHNOLOGY THRUST AREA
Remote Sensing



Capabilities/Areas of Concern:

- **Full spectrum of remote sensors with ability to fuse all info into usable intelligence**
- **Identifying real-time/near-real-time movements of targets**
- **Target acquisition reliability**
- **Increased standoff from targets**

Technology Objective:

- **Sensor systems should possess sufficient Artificial Intelligence to prevent being easily defeated by enemy countermeasures**
- **Semi-autonomous system capable of penetrating denied areas and detecting other sensors**
- **Operate in all environments and communicate with operators as well as networked headquarters**

TECHNOLOGY THRUST AREA
Advanced Training

Capabilities/Areas of Concern:

provide key virtual 3D environments

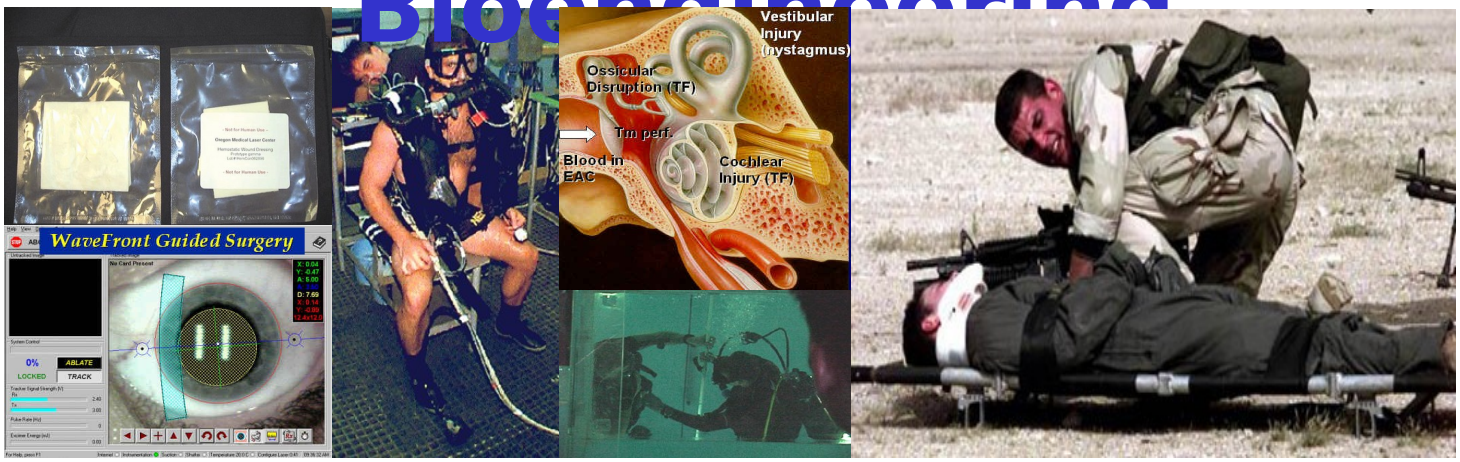
- **Improved Modeling of SOF Within Services Simulations/Models**
- **Live & Virtual In-flight re-planning System**
- **Faster/higher fidelity virtual SOF mission rehearsal**

Technology Objective:

- **Systems must cover the entire spectrum of mission preparation from planning to training to rehearsal to execution**
- **Systems must be tailorable and on-demand through use of databases and data fusion tools to replicate the full range of situations and conditions**

TECHNOLOGY THRUST AREA

Bioengineering



Capabilities/Areas of Concern:

- **Exhibit physical endurance significantly above those of the enemy (Extend all senses)**
- **Whole blood substitutes**
- **Soft tissue regeneration capability**
- **Cold sterilization and the ability to administer anesthetics in the field**
- **Rapid Diagnostics capability to**

Technology Objective:

- **Disease diagnostics, miniaturized medical monitoring, field analgesia, hand-held laser instruments, devices for coagulation and closure**
- **Protection from infection, pests, and chem/bio agents**
- **Prophylactic interventions, ergogenics, pharmaceuticals, tissue regeneration,**

TECHNOLOGY THRUST AREA
Directed Energy Weapons

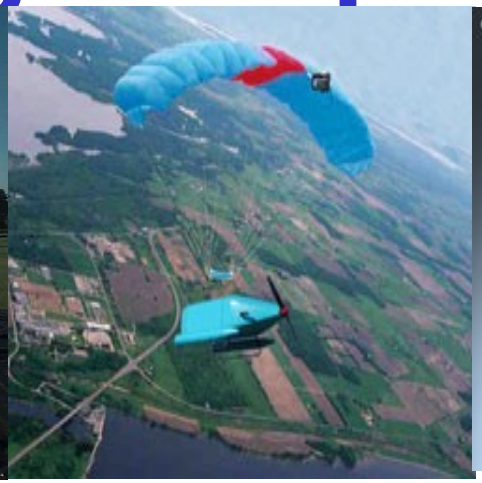
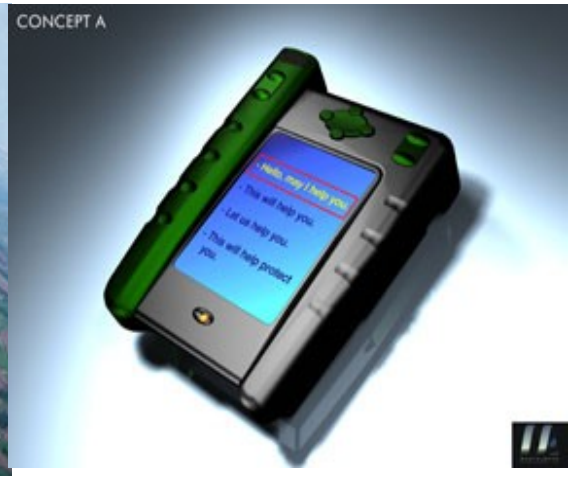
Capabilities/Areas of Concern:

- **tunable Lethal/Non-lethal Weapon**
- **Kill, neutralize or suppress enemy or civilian personnel with no signature**
- **Isolate an objective or deny an area for use by personnel or vehicles**

Technology Objective:

- **Tunable lethal/non-lethal weapon to neutralize, kill, or suppress enemy or civilian personnel as well as incapacitate vehicles, ships, or aircraft**
- **Ability to force personnel to vacate an area or temporarily incapacitate personnel within a bunker, building, ship, or plane**

TECHNOLOGY THRUST AREA
Psychological Operations

Capabilities/Areas of Concern:

750KM) multidimensional dissemination

- **Ability to communicate with indigenous people around the world to effectively influence**
- **Mine all known worldwide databases through the use of key words**

Technology Objective:

- **Robust, secure, and interoperable C2 system that requires access to advances in analytical/planning tools**
- **Effects modeling and assessment**
- **Long-range multidimensional broadcast system**

R&D FOCUS

SOF Warrior System:

- Enhanced protection, armor, lightweight sustainment systems
- Enhanced weaponry and night vision devices and other individual sensors
- Signature management and other countermeasures in all environments

See the enemy regardless of concealment

Sensors:

- Unmanned, semiautonomous, autonomous robotic systems (air, land, sea and future space) from tactical to nano size for missions requiring R&S, target designation, destruction and assessment, NBC activities, CP in deeply buried complexes,

IFF, navigation systems and

Power:

- Power sources must be capable of continuous operation with minimal thermal, electromagnetic, acoustic, or visual signature and operate effectively underwater and underground
- Lightweight, small, maintenance free, rechargeable, long duration (months), interchangeable and

SOF TRUTHS

- Humans are more important than hardware
- Quality is better than Quantity
- Special Operations Forces cannot be mass produced
- Competent Special Operations Forces cannot be created after emergencies occur

HOW TO GET TO US

Call us with your ideas & partnership in our war against terrorism

- **Points of Contact for Industry (Technical Industrial Liaison Officer)**
  Joseph R. Daum (813) 828-9482
  daumj@socom.mil

- **Points of Contact for DoD**
  Frank Wattenbarger (813) 828-9361
  wattenj@socom.mil

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